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WHAT IS CLAIMED IS:

1. An apparatus for retarding an engine having a cylinder with an exhaust valve, an intake valve, an intake stroke, an exhaust stroke, a compression stroke and an expansion stroke, the apparatus including an exhaust brake and a compression release brake, the exhaust brake including a variable exhaust restrictor, a pressure sensor for sensing pressure of exhaust gases, a controller operatively connected to the pressure sensor and to the exhaust restrictor so as to adjust opening of the exhaust restrictor during operation of the apparatus so exhaust pressure is sufficient to cause exhaust valve float prior to bottom dead center of intake strokes of the cylinder, thereby enhancing operation of the compression release brake.
2. The apparatus of claim 1, wherein the compression release brake is a bleeder brake and includes a device for maintaining the exhaust valve open during the compression stroke.
3. The apparatus of claim 2, wherein the engine has a valve opening mechanism for the exhaust valve, said device for maintaining the exhaust valve open including a hydraulic device.
4. The apparatus of claim 3, wherein the valve opening mechanism for the exhaust valve includes a rocker arm, the device for maintaining the exhaust valve open including a hydraulically extendable member mounted on the rocker arm which contacts said exhaust valve.
5. The apparatus of claim 4, wherein the member is reciprocally mounted in a cylinder on the rocker arm, a passageway providing hydraulic fluid to the cylinder to extend the member when there is clearance between the member and the valve.

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6. The apparatus of claim 5, including a check valve for inhibiting hydraulic fluid flowing from the cylinder to the passageway when the rocker arm moves towards the exhaust valve.
- 5 7. The apparatus of claim 6 including means permitting controlled leakage of hydraulic fluid from the cylinder during the compression stroke so as to allow the exhaust valve to effectively close at completion of the exhaust stroke.
8. The apparatus of claim 1, wherein the exhaust restrictor is a butterfly valve.
- 10 9. The apparatus of claim 1, wherein the exhaust restrictor is a variably restrictive turbocharger.
10. The apparatus of claim 2, wherein the device maintains the exhaust valve open throughout the compression stroke.
- 15 11. The apparatus of claim 1, wherein the controller includes a lookup table of exhaust pressure values which are sufficient to cause said valve float of the exhaust valve, but below a maximum value.
- 20 12. The apparatus of claim 1, including a temperature sensor for sensing exhaust gas temperatures, the temperature sensor being operatively connected to the controller, the controller adjusting the exhaust restrictor so the exhaust temperature remains below a maximum value.
- 25 13. A method for retarding an engine apparatus having a cylinder with an exhaust valve, an intake valve, an intake stroke, an exhaust stroke, a compression stroke and an expansion stroke, the apparatus including an exhaust brake and a compression release brake, the exhaust brake including a variable exhaust restrictor, a pressure sensor for sensing pressure of exhaust gases and a controller operatively connected to the pressure sensor and to the exhaust restrictor, the
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method comprising adjusting the opening of the exhaust restrictor during operation of the apparatus, utilizing the controller and exhaust restrictor, so exhaust pressure is sufficient to cause exhaust valve float prior to bottom dead center of intake strokes of the cylinder, thereby enhancing operation of the compression release brake.

14. The method of claim 13, wherein the compression release brake is a bleeder brake and maintains the exhaust valve open during the compression stroke.

15. The method of claim 14, wherein the engine has a valve opening mechanism for the exhaust valve, the exhaust valve being maintained open hydraulically.

16. The method of claim 15, wherein the valve opening mechanism for the exhaust valve includes a rocker arm, the exhaust valve being maintained opened by a hydraulically extendable member mounted on the rocker arm which contacts said exhaust valve.

17. The method of claim 16, wherein the member is reciprocatingly mounted in a cylinder on the rocker arm, hydraulic fluid being provided through a passageway to the cylinder and extending the member when there is clearance between the member and the valve.

18. The method of claim 17, including a check valve which inhibits hydraulic fluid flowing from the cylinder to the passageway when the rocker arm moves towards the exhaust valve.

19. The method of claim 18 including the step of permitting controlled leakage of hydraulic fluid from the cylinder during the compression stroke so as to allow the exhaust valve to effectively close at completion of the exhaust stroke.

20. The method of claim 13, wherein the exhaust is restricted by a butterfly valve.

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21. The method of claim 13, wherein the exhaust is restricted by a variably restrictive turbocharger.
- 5 22. The method of claim 14, wherein the exhaust valve is kept open throughout the compression stroke.
23. The method of claim 14, wherein the controller utilizes a lookup table of exhaust pressure values which are sufficient to cause said valve float of the exhaust valve,
10 but below a maximum value.
24. The method of claim 13, including a temperature sensor for sensing exhaust gas temperatures, the temperature sensor being operatively connected to the controller, the controller adjusting the exhaust restrictor so the exhaust
15 temperature remains below a maximum value.